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(54) REFORMING REACTOR

(57) Abstract:

PURPOSE: To produce a reforming reactor capable of quickly starting in high thermal efficiency and having excellent hydrogen recovery rate, compact size and reduced electric power consumption by placing a partial oxidation, decomposition and reforming reaction catalyst and a heating resistor in the reforming reactor.

CONSTITUTION: This reforming reactor 11 is provided with a catalyst 10 and a heating resistor 12 embedded in the catalyst 10. The catalyst 10 has a function to proceed and accelerate the partial oxidation, decomposition and reforming reaction of a hydrocarbon or an oxygen-containing hydrocarbon such as methanol. The hydrocarbon, water and oxygen supplied to the reforming reactor 11 are heated at a prescribed temperature to start partial oxidation reaction and reforming reaction and form hydrogen and carbon dioxide as main products. The formed hydrogen and carbon dioxide are supplied to a hydrogen-separation apparatus 14 and the non-permeated gas left after the separation of hydrogen is exhausted. The electric power generated by a fuel cell 16 is stored in a battery 18. The power stored in the battery 18 can be used for the heating of the reforming reactor 11.